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ABSTRACT

This study of the bidirectional effects of parent-child relations, focuses on the exchange of attachment behaviors, investigating the interactions of twelve 3-member nuclear families in a strange-situation condition. Dyadic and triadic conditions involving parents with their 12-, 18-, or 24-month-old children were observed and videotaped in a waiting room setting with a habituated unfamiliar adult female used as a comparison figure. Among the major results discussed were the following: (1) children preferred to interact with either of their parents rather than with another friendly but unfamiliar adult; (2) children exhibited low frequencies of attachment behaviors, suggesting low levels of anxiety (possibly because parents had not been instructed to avoid initiating interactions but were allowed to interact naturally, and because children had become habituated in a prior session at home to the unfamiliar adult); (3) by far, the largest number of attachment exchanges was initiated by the parents rather than by the children. Four suggestions of potential benefit to future researchers were made regarding procedural issues in the study of parent-child relations. (SE)

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Parent-Child Attachment Behavior in a Quasi-naturalistic Setting

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ABSTRACT

The bidirectional effects of parent-child relations, with a focus on the exchange of attachment behaviors, were investigated by recording the interactions of three-member nuclear families in a strange-situation condition. Dyadic and triadic conditions involving parents with their 12, 18, or 24 month old children were observed in a waiting room setting. An adult female was used as a comparison figure to aid in the description of second-order effects. A time-lagged design was utilized to provide additional tests of developmental trends. Results indicate that: (1) parents were equally successful in calming a child distressed either by the departure of the other parent or by the approach of the other adult; (2) parents tended to anticipate their children's insecurity at these times and displayed attachment behavior to the child before a request for such behavior had been signalled by the child, (3) all exchanges of attachment behavior were intrafamilial, and all fear-wariness behavior was directed by the child in response to the approach of the other adult, (4) younger children tended to receive proportionally more behaviors than they gave, i.e., they were the centers of attention.

The research conducted thus far in the area of attachment formation suggests that attachment has largely been conceived as a characteristic of the individual, rather than as a distinctive feature of a specific interacting dyad. Researchers have concentrated primarily on describing the infant's differential behaviors toward the parents (usually the mother) and other adult figures (usually total strangers) in an attempt to account for the development of the distinctive emotional tie of the child to his mother (cf., Bowlby, 1958; Kotelchuck, Note 1). Ainsworth (1964, 1967) and Bowlby (1969) have discussed in great depth a large number of "attachment behaviors" used to categorize the manner in which the infant differentially responds to the object of his attachment. Even though numerous researchers (e.g., Ainsworth, 1972; Gewirtz, 1972; Gewirtz and Boyd, 1977; Hartup and Lempers, 1973; Marvin, 1977) have suggested that we should approach the question of attachment formation by focusing upon the "dyadic synchronization" of parent-child interaction, very few (e.g., Blehar, Lieberman, and Ainsworth, 1977; Weinraub and Frankel, 1977) have attempted to observe naturally occurring interactions between parent and child. The vast majority of research in the area of attachment has been conducted with parents having received the instruction that they were to "respond naturally, but not to initiate interaction with their infants" (Weinraub and Frankel, 1977, p. 1240). The widespread use of such instructions by researchers of attachment development has created a situation whereby the assumed dyadic process is commonly viewed unidirectionally. That is, we observe, record, and categorize the child's attachment behavior while remaining largely uninformed of the nature of parental attachment behaviors.

Blehar et al. (1977) have investigated the relationship between maternal behavior and the quality of later mother-infant attachment, and note that the nature of the mother's behavior during early interaction (infant from 6-9 weeks

of age) influences the quality of the child's attachment as assessed through the strange situation procedure when the child is approximately one year old. Weinraub and Frankel (1977) have observed father-child and mother-child interaction in a free play situation to investigate the differences in free play, reaction to departure, and separation from parent as a function of parent gender and/or infant gender. While each of these studies is very interesting and valuable in providing more information concerning parent-child interaction, neither supplies data telling us precisely what parents do with their children, nor how the children respond to their parents. Both Blehar et al. (1977) and Weinraub and Frankel (1977) offer tables indicating the correlations between parent and infant behaviors but these tables cannot tell us who is initiating this interaction. The practice of observing children with active but non-initiative parents might be seen as a further example of ecological invalidity (cf., Bronfenbrenner, 1974) in our developmental research if these instructions act to create an unnatural situation for the parent-child dyad. Therefore, we chose to observe parent-child interaction in free play, departure, separation, and reunion situations to record what behaviors the child directed to each of his parents and to another adult figure, and vice versa, and also how the recipient of this initiatory behavior then responded. In an attempt to approach more closely the goals of conducting ecologically valid research, the parents observed in this investigation were simply asked to behave normally. Our basic procedure involved observation of parent-child interaction in a waiting room setting. It was suggested that the parents might conceive of the situation as a visit to a dentist's office with our observers present to record their child's behavior in the waiting room.

The "strange situation" paradigm, as developed by Ainsworth and Wittig (1969), has been extremely useful in generating data to determine how the child

responds differentially toward the mother and an adult female stranger. The "strange situation" is a standardized sequence of episodes involving the systematic introduction and departure of various people in a laboratory room to observe the child's behavior under various distressful conditions. Lamb (1976a) modified the strange situation such that fathers were also observed, but even this cannot satisfy the challenge that the entire paradigm might be lacking ecological validity. Cohen (1974) has pointed out that the use of an adult female stranger as a comparison figure may act to confound one's data since this figure may be perceived by the child not only as other than the parent, but also as a fear stimulus. He suggests that the child to be studied in such a manner be given a period of time to habituate to the stranger such that avoidance responses are no longer elicited by the stranger's approach. Cohen then refers to this comparison figure as a "habituated unfamiliar figure" (1974, p. 208). In this investigation, we allowed the child a period of from 20 to 40 minutes of free interaction to habituate his fear of our female undergraduate "stranger". Observations were then conducted one week later after a brief warm up period (10-15 minutes) had re-acquainted the child and the stranger, and had allowed the family to acclimate to our laboratory room. Our modification of the "strange situation" involved eight episodes of dyadic and triadic interaction to measure not only the child's differential behavior with respect to the adults, but also each adult's differential behavior with respect to whomever was present.

To summarize the arguments presented by Bronfenbrenner (1974), a conceptual model for the investigation of child development questions has been described which may act to move researchers in the direction of conducting more ecologically valid research. Forerunners of this model can be found in the sociology and social psychology literature of nearly two decades ago in reports on social

interaction in small group settings. The major properties of Bronfenbrenner's model include: (1) reciprocity--the emerging model is conceived as a two-way system in which the behavior of each participant both affects and is affected by the behavior of others (person or environmental factors); (2) a consideration of both adult and child behaviors as dependent variables with the independent variable conceived as some systematic variation in the ecological situation; (3) a focus on three-person nuclear families with its potential dyadic interactions as a means of expanding the socialization system, and (4) an interest in second-order effects in addition to the standard first-order considerations.

Method

Subjects: Three-member nuclear families consisting of a mother, father, and their child were observed. Three age groups of children, 12, 18, and 24 months (± 2 weeks), were observed with two male and two female children at each age level (except for the 24 month old level where there were three males and one female). Thus the total sample consisted of 12 families. Six children were first-born and six were later-born. At each age level one boy was a first-born and one was later-born. The same was true for the 12 month old girls, but both 18 month old girls were later-born, and the single 24 month old girl was a first-born. All families were Caucasian.

Birth notices from the local newspaper were used as a source of potential subject families. Approximately 40 family names were obtained from this source. Only 28 of these families still lived in the area, thus drastically reducing our potential subject pool. Friends, secretaries, neighbors, etc., helped to provide the names of another 19 families from which our sample might be drawn.

All parents were the biological parents of the children observed; none had been previously married and divorced. The mean age of the fathers was 31.8 years and that of the mothers was 29.8 years. Social status of the families was assessed by the Hollingshead Two Factor Index of Social Position (Note 2). The mean rating on this scale was 17.08, with no significant differences found between age or sex of child subgroups. Seven families were in Social Class I (the class enjoying the highest social status and prestige based on public opinion of occupation type and education level), three were in Social Class II, and two were in Social Class III (the median on this scale). All of the fathers had completed some college education (four held bachelor degrees, two had master degrees, and four held doctoral degrees). All but one of the mothers had completed high school, ten had completed some college education, six had bachelor degrees, three were involved in pre-master graduate work, and one held a master degree.

Procedure: Home visits were scheduled for a 30 to 45 minute period. This time was used to collect background information, explain the project, and allow the family (the child in particular) to get acquainted with the female undergraduate who would act as our "habituated unfamiliar figure". A time for the family to come to our laboratory to be filmed in free interaction was then scheduled. All filming sessions were held in a building which had the appearance of a home. The sessions were held on Friday evenings or on Saturdays or Sundays so that all family members could be present. The room used for the observations had a floor-space of 3.05 by 4.50 meters which was covered with a thick carpet. Three large, .91 by 1.75 meter, one-way mirrors were mounted on one wall. A video camera, equipped with a wide-angle lens, was mounted on the wall opposite these mirrors. Six upholstered chairs were placed in the room for the adults, and two molded fiberglass chairs were included for the child. An end table

separated the chairs designated for the mother and the father. The parents sat with their backs to the mirrors. Current magazines were placed on the table and six toys were placed on the floor equally distant from each parent's chair. Only two of the 24 parents and one of the 12 children noticed the wall-mounted camera.

Insert Figure 1 about here

After the family had become acclimated to the room (approximately 15 minutes) their behavior was recorded on audio-visual tape. A modification of the strange situation procedure was used to control the systematic entrances and departures of the adults to and from the observation room. The design was counterbalanced for the sex of the first parent to leave the room such that at each age-sex level one child was first observed in dyadic interaction with the mother, the other with the father.

Episode 1 of the observation schedule consisted of a 3 minute period to obtain a base rate of exchange for the family triad. Episode 2 consisted of the departure of either parent and the observation of the child's response and subsequent interaction with the remaining parent. This episode began as the parent stood up in response to being called by a receptionist to "See the dentist now", and lasted for a 4 minute period. Episode 3 began with the entrance of the habituated unfamiliar figure (hereafter referred to as the other adult) and involved the observation of the interaction of the resulting three dyads. The episode was 4 minutes long.

Episode 4 represented a return to the base situation as the other adult departed and the missing parent was reunited with the family. This episode continued for a 3 minute period. Episodes 5 and 6 were counterparts to numbers

2 and 3 above. Here the parent who remained in the room previously departed and the same sequence of events followed with the other parent. Episode 7, like episode 4, represented a 3 minute return to the base situation. These base situations were included to obtain information on the effects of cumulative time on the family's interaction patterns. The final episode, number 8, consisted of a 4 minute observation of the interaction pattern between and among the family in the presence of the other adults.

Insert Table 1 about here

At no time were both parents separated from their child. No instructions were given to the parents concerning how they should interact with their child, except that they were told to act as if actually sitting in the waiting room of their dentist's office. However, they were asked not to smoke and to keep their child away from the mirrors--this would keep the child in the field of the camera. After the filming session was completed the family was invited to view a portion of the tape to "see themselves on TV". Those parents with children of 12 or 18 months of age were told they would be contacted in approximately six months when the entire procedure, home visits and filming, would be repeated in exactly the same manner. A second female undergraduate played the role of the other adult in order to ensure that a learning effect would not alter the parents' or the child's interaction with the habituated stranger. This second session marked the end of the data collection segment of the investigation.

Behavior targets: The observable behavior of the parents, the child, and the other adult were conceptualized as the dependent variables. The components used to describe the setting, obtained by noting who was present in the observation room, were considered the independent variables. Specifically, these

independent variables included the age and sex of the child, the birth position of the child, the sex of the parent interacting with the child, and the identity of the other people in the room at the time of the dyadic exchange.

Before defining the dependent variables recorded, a number of other variables must be operationalized. First, the focal subject was the individual subject being observed at the moment. Behaviors were recorded as they occurred with respect to this subject. Second, the referent was the other person(s) or object(s) with whom the focal subject interacted. Third, a specific score-rescore criterion which describes the method of recording any coded behavior which was repeatedly directed either to or from the focal subject, was employed. A repeated behavior would be scored a second time if, after a three second interval, the same behavior was still being exhibited by the same actor. The directionality of the behavior was judged by the actor's visual-motor orientation, by the message or action content, or by the context of ongoing events. If the referent did not respond to the focal subject's initiation, or vice versa, within the three second time, then that person was scored as either "unaware" or "ignoring" in accordance with the definitions below. For example, if a child speaks to a father who is reading a magazine, and if that father does not overtly respond to the child within a three second period, then the father's reaction would be coded as either unaware or ignoring. And fourth, as mentioned above, the observational focus of this project was sequences of interactive behavior. An interaction was conceived to be a three-part unit consisting of (1) an initiatory act either on the part of or directed towards the focal subject, (2) the response of the recipient of the initiatory behavior, and (3) the subsequent response of the original initiator to the recipient's response. Thus an interaction may be symbolized as either Focal subject$_1$ → Referent → Focal subject$_2$, or as Referent$_1$ → Focal subject → Referent$_2$.

Interactions were scored as either verbal or physical. A directionality component was added, thus producing four general classes of interactions--verbal gives, verbal receives, physical gives, physical receives. Verbal behaviors involved any exchange of meaningful dictionary words or nonsense sounds (giggles, moans, aah's, etc.) which demonstrated an obvious directionality. A verbal give was scored when the focal subject verbalized to a referent; a verbal receive was scored if the focal subject was the recipient of a referent's verbalization. Physical behaviors consisted of the exchange of a behavior involving either gross or fine body movement which were directed to another. Examples of behaviors scored as physical exchanges include touching, kissing, holding, moving towards the other person, turning away from the other person, and so on. A physical give was scored when the focal subject emitted either a gross or fine body movement to a referent, and a physical receive was scored when the focal subject was the recipient of such an action. If an exchange involved both verbal and physical behaviors, each was scored with the more salient act being entered first.

The nature of the interaction was further qualified by adding one of the following descriptors. First, an interaction was considered affectional or attachment oriented if it acted to provide comfort or security to another. Examples of such interactions include events of hugging, kissing, clinging, the offering of verbal reassurance, allowance of prolonged physical contact, smiling, etc. Second, an interaction was described as affiliative if it acted to provide resources, knowledge, or cooperation to another. Exchanges of an affiliative nature often were found as discussions of objects or events, exchanging information concerning one another, the sharing of toys or magazines, playing, and smiling. Third, an interaction described as being of a fear-wariness mode included crying, physical withdrawal in the form of leaning away from, or

turning the eyes from the other, pouting, cry-face, shifting feet back and forth, looking with the face downcast, etc. And, fourth, any physical activity resulting in the movement of a person from beyond to within 3 feet of another was considered an approach. Such a behavior was usually accompanied by some signal to inform the other that either an attachment or an affiliative response was desired, thus necessitating the scoring of multiple behaviors. In such an incidence, the approach behavior was scored first while the attachment or affiliative act was entered subsequently. The reader familiar with the attachment literature will recognize that these four categories have been borrowed from Bretherton and Ainsworth (1974) and from Tracy, Lamb, and Ainsworth (1976).

Two other categories of interactive situations were used to provide information concerning the nature of the response emitted by the recipient of an initiatory behavior. At times, behaviors were directed towards another person without that person directly responding to the initiation. Certain apparently non-active responses were scored as an ignore if it was judged that the recipient of the initiatory behavior was aware of but deliberately unresponsive to the other. For example, a parent might ignore the crying of a child. This was conceptualized as being an active, but non-interactive behavior. Other non-interactive responses were scored as unaware if it were judged that the recipient was not actually cognizant of the other's behavior. For example, the parent engrossed in a magazine article may not hear the child's affilitative effort to share a toy.

Data scoring procedure: Audio-video tapes were coded by the first investigator and two trained assistants using the Behavioral Observation Scoring System (Burgess and Conger, Note 3). The observation technique used involved a combination of time- and event-sampling procedures. Each of the 8 episodes were divided into 30 second time intervals. The child was considered the focal

subject for the first 30 second interval of each of the 8 episodes to ensure that observations of his reaction to the transitions occurring at the beginning of each episode could be made. The other subjects in the observation room were alternately considered the focus for the observation within each subsequent 30 second period. The overall percentage of interrater agreement, computed by dividing the total number of agreements by the total number of decisions made, was .81. Satisfactory reliability could not be established for ignore (range of .47 to .67 for a mean of .57), or for unaware (range of .53 to .71 for a mean of .60). Thus, these categories were excluded from further analysis. The overall reliability figure then rises to .89. This figure is thought to be somewhat conservative in that only agreements concerning scored social events were used in the computations.

In this project the lack of interaction between two people was also of interest. If those occasions where the raters had agreed that no interaction had taken place were also treated as decisions, the resulting overall interrate reliability figure is .93. Periodic reliability checks were conducted throughout the film scoring procedure (after approximately every three films) to be sure that a high level of agreement was maintained.

Results

For each family, mothers and fathers were observed for approximately 21 minutes, the children for approximately 29 minutes, and the other adult for approximately 12 minutes. Consequently the frequencies of behavioral exchange observed for these subjects were standardized and converted into rates of exchange. To accomplish this we first computed the dyadic time for the interacting dyads. Matrices were constructed for each subject denoting the amount of time s/he spent in the observation room with each other subject. The addition of these four matrices resulted in a matrix of dyadic time which indicated the

exact time each dyad possessed for interaction. Frequency scores were then converted into rates of exchange.

A repeated-measure MANOVA using the mean rates of behavior exchange by category was the preferred method of analysis. This procedure demands cells of at least 10 subjects for results to be considered reliable. Since the present study did not meet this requirement, comparisons of means were made via multiple t-tests. When conducting multiple t-tests one runs the risk of creating a large type I error potential for the family of tests run. To counter this error potential we used two-tailed probabilities, the stringent .01 level of significance as a standard, and independent variance estimates for each comparison. These steps, when used with such a small sample and hence a low degree of freedom, act to create a situation whereby only very large differences between group means will produce statistically significant results. In any event, since the nature of this project was to generate rather than to test hypotheses, these statistical arguments are of little importance.

One other consideration should be made before reporting the results of this project. Even though we observed only a few subjects, we obtained a great deal of information concerning each of them. A 29 minute observation session for 20 family groups (12 original families plus 8 repeated observations) produced approximately 10 hours of continuous observation. Since coding was conducted on a second-by-second basis, with a three second score-rescore requirement, we had the possibility of observing at least 12,000 specific interactions. Were we to assume that these are evenly distributed across each age-sex level of child, we would have approximately 600 interactions per family observation session. Actually we only scored about 350 interactions per family, since periods of non-interaction were not scored. In short, even though our overall number of subjects was small, our total amount of interaction data was quite large.

A list of 72 variables was selected to be of interest in the preliminary stages of data analysis. These included the rates of verbal and physical behaviors by each subject, the parental rate (combination of mother and father rates), the rates of behavior from each subject to each other subject, and the total rate of verbal and physical exchange shown in each family setting. In addition, relative rates of giving and receiving were computed for each subject both to and from each other subject. These data can be found in Stewart (Note 4).

A brief summary of the major results is as follows: (1) no significant differences were found between family interaction rates of families with first- and later-born children; parents of later-born children tended to be more physical than did parents with first-born children, who in turn tended to be more verbal with their children; (2) no significant differences were found between families with sons and those with daughters; surprisingly, girls tended to be somewhat more physical than boys; (3) the assumptions implicit in any cross-sectional design were first verified before any statements concerning age differences were made (See Note 5 for an explanation of the procedure used.); none of the 72 contrasts for each age level, 18 and 24 months old, approached significance though there seemed to be more verbalizations at the first observation session regardless of age; and (4) the cross-sectional data comparisons revealed one significant difference--24 month old children verbalized more than did 12 month olds ($t = 3.63$, $p \leq .011$); no other significant differences were detected. Even though non-significant t values and probability figures have not been listed, it is interesting and important to note that these comparisons typically revealed extremely non-significant differences.

Analyses were then conducted within each age level to compare the rates of child to adult and adult to child behavioral exchange. The mean rates of

verbal exchange are summarized in Table 2. At all ages, the child quite obviously exchanged far more verbalizations with the parents than with the other adult. Indeed, on the average, the children verbalized toward the parent 24 times more often than toward the other adult. Note also that the differences between rates of mother-child and father-child verbalization were non-significant.

Insert Table 2 about here

The mean rates of physical exchange are summarized in Table 3. Here the differences between parent-child and other adult-child exchange were less clear, but intra-familial exchange was, nonetheless, always greater than other adult-child exchange.

Insert Table 3 about here

Even though the differences were not statistically significant, it should be noted that the mothers typically directed more behavior to their child, and also received more from their child, than did the fathers at each age level. This suggests that the exchange between parent and child, though far from being equal, is nonetheless reciprocal in that the parent who gives the most also receives the most.

Mean rates of exchange for attachment behaviors were computed combining the verbal and physical modes. These data appear in Table 4. Relatively low rates of attachment behaviors and rather large intra-age group variances created a situation whereby no differences could be found to be statistically significant. Even so, it is interesting that no attachment behaviors were directed either to or from the other adult. Mean rates of affiliative exchange were computed in a

similar manner. These data appear in Table 5. In general, many more parent-child exchanges of affiliative behavior took place than did other adult-child exchange at each age level. The differences between mother-child and father-child exchanges were negligible. The frequencies of attachment and affiliative behavior combined to account for approximately 98% of all familial behaviors recorded (9% of all behaviors were classified as attachment and 89% as affiliative). The remaining 2% consisted of fear-wariness and approach behaviors. These were equally distributed over the age groups, but due to their infrequent occurrences no further analyses of their exchange were conducted. All incidences of fear-wariness behavior were directed by the child to the other adult. Approach behaviors were primarily child to parent, with the mother and father receiving relatively equal shares. Only one incident of child to other adult approach was recorded.

Insert Table 4 about here

Insert Table 5 about here

Mean relative rates or proportions of giving and receiving within the family were then calculated and analyzed. These data appear in Table 6. Comparisons reveal no significant differences between either the mothers' and fathers' rates of giving or receiving. Of interest, however, is the fact that at all three ages the children received far more than did either of their parents, even though at no age did they give significantly more. The child's relative rate of receiving is slightly more than that of his parent's combined rates, indicating that the child tends to be the center of attention for the

family in this situation. The mean relative rates of total interaction shown in Table 6 were then broken down for attachment and affiliation interactions. These data appear in Table 7 without further analyses. Again it is evident that the child receives far more behaviors than he gives to his parents. Since only two incidents of attachment exchange between parents were recorded, this further indicates that the child may be the recipient of a great deal of unsolicited attachment behaviors from his parents. Figures 2, 3, and 4 graphically represent these data for families with 12, 18, and 24 month old children respectively.

Insert Table 6 about here

Insert Table 7 about here

A test for a potential order effect was made by comparing episode 2 of one observation schedule with episode 5 of its counterbalanced schedule for mother-child and father-child dyadic situations. No significant differences were found between early and late mother-child dyadic exchanges or between early and late father-child dyadic exchanges. Data files were then edited so that the counter-balanced design was collapsed to appear as if a single observation schedule had been used. Comparisons within each age group could then be made for changes in dyadic exchange rates across our eight episode sessions. These data can be found in Stewart (Note 4).

Insert Figure 2 about here

Insert Figure 3 about here

Insert Figure 4 about here

Summarizing these data we find: (1) fathers of 12 and 24 month old children engaged in family triadic situations 20% less often than did their wives; when their wives left the room, however, these fathers tended to increase their rates of giving such that they interacted with their children at a rate quantitatively similar to that of their wives; (2) parents of 18 month olds tended to match their giving behavior in such a way as to divide the task of interacting with the child more equally; (3) the children's rates of giving were higher in both mother-child and father-child dyadic situations than in any of the three family triadic situations; (4) no significant second-order effects were found to influence the parents' rates of exchanging behaviors though the parents of 18 month olds tended to verbalize less and give less affiliative behavior when their spouse was present; (5) the children's rates of giving were especially stable across all episodes; (6) fathers of 12 and 24 month old children would talk to the other adult only when their wives were not present; none of the mothers nor the fathers of 18 month olds ever spoke to the other adult; (7) children tended to exhibit slightly more attachment behavior towards the end of the session, thereby suggesting a potential fatigue effect; most parent-child attachment exchanges occurred in the family dyadic situations, moderate amounts occurred at the beginning of the triadic situations with the other adult present, and the least occurred in familial triadic sessions; (8) the increase in parent--child attachment exchange observed during the dyadic episodes and during the

episode involving the presence of the other adult was primarily due to increases in the maternal and paternal rates of giving attachment behaviors rather than from increases in the child's rate of giving; the parental rate of giving attachment to the child rose during these episodes such that the parents gave from 2 to 6 times as much as the child.

Discussion

The results of this investigation point to the preferences for the child to interact with either of his parents rather than with another friendly, but unfamiliar adult. This can be viewed as a systematic replication (Sidman, 1960) of the research by Kotelchuck (Note 1, 1976), Kotelchuck, Zelaro, Kagan, and Spelke (1975), Lamb (1976a, 1976b, 1976c, 1977), and Spelke, Zelaro, Kagan and Kotelchuck (1973). The present study differed from each of these in three major ways: (1) in the use of a habituated unfamiliar figure rather than a total stranger; (2) parents were not instructed to avoid initiating interactions but were instead allowed to interact naturally with their children; and, (3) parental behaviors were recorded and analyzed to describe the nature of parent-child exchanges. These changes in the research paradigm have produced data which, though generally supportive of the conclusions from previous research, point to the need for more careful consideration of the interpersonal dynamics of attachment relations.

The low frequency of attachment behaviors by the children in this study is especially of interest. Only 9% of all behaviors recorded were classified as attachment as defined by Bretherton and Ainsworth (1974). This might be seen as evidence of a lack of anxiety in the child and thus a suggestion that the habituation period experienced by each family prior to the observation session had been successful in reducing the child's fear of our comparison figure. The near absence of fear-wariness behaviors from the child further supports this

contention. Lamb (1976c) has reported that the presence of the other adult resulted in a dramatic increase of attachment behaviors directed by the child to the parent. Our results do show an increase in child to parent attachment behavior, but this increase is trivial in comparison to the increase of parent to child attachment behaviors. We feel that the habituation process had removed the child's fear of the other adult such that a dramatic change in his/her behavior pattern was not necessary when the other adult entered the room. Another possible determinant of the low rate of attachment behavior by the children is the fact that the parents were allowed to interact normally with their children. Perhaps the high parental rates of initiating the exchange of attachment behaviors with the child, as was seen especially with the mothers in this study, may have had the effect of anticipating the child's response to the situation. That is, the child's low rate of initiating attachment exchanges may be an indication that the active parent creates a setting in which the child is less apprehensive of strangers.

The fact that our parents were free to interact with their children in a natural manner produced results which suggest that the data in previous attachment studies might be in need of re-evaluation. The parents in our study were responsible for approximately 70% of all initiations recorded, and the children tended to receive well over 50% of all behaviors given. This creates a situation in which parents actively interact with their child but rarely with their spouse. The situation of continually giving to a child who infrequently reciprocates and the relative infrequency of parent to parent exchange might be acting to create a condition contributory to the decline in marital satisfaction commonly found after the birth of a child (cf., LeMasters, 1957; Rossi, 1968).

It was interesting that the largest number of attachment exchanges was initiated by the parents rather than by the child. The typical situation

involving attachment exchange was found either in reaction to the departure of one parent, or in reaction to the entrance of the other adult, as the parent who remained with the child acted as if to reassure the child that everything would be alright. Either our parents were picking up signals from the child which our observers consistently missed, or these parents were providing unsolicited attachment behaviors to the child. Since previous researchers had noted the presence of attachment responses from the child in these situations, our observers were more than likely biased to find child initiated attachment exchanges. We therefore doubt that they could have so consistently missed these signals, and instead suggest that our parents were simply acting normally, or perhaps a bit better than normal in an attempt to impress us with their level of responsiveness to their child.

If, as suggested by Kagan (1972), Kotelchuck (Note 1), and Spelke et al. (1973), attachment behaviors can be thought of as being a child's protest to discrepant events which he can neither assimilate nor act upon, then one might suggest that the situation of having a relatively inactive parent in a social setting might represent such a condition for a child. Assuming this to be plausible, previous research in attachment might be seen to have another confound problem (in addition to that created by using total strangers as comparison figures) in that one cannot determine whether the child's attachment behavior exhibited when a stranger enters the room is due to the inactivity of the parent in this situation, or due to the child's anxiety and fear of the approaching stranger. Considering the high activity levels of the parents in this project, we suggest that the presence of a non-initiating parent indeed constitutes a discrepant event from the child's perspective. Our data suggest that the presence of the stranger is not, in and of itself, a fearful situation, especially if the child has had time to interact freely with that stranger.

Consequently, we feel that Cohen's (1974) suggestion that the total stranger be replaced with a habituated unfamiliar figure for purposes of comparison in the strange situation procedure is a realistic and valuable addition to attachment research. We also feel that the practice of instructing parents how to behave should be re-evaluated. One avenue for future research in attachment might involve direct comparisons of children's rates of giving attachment behaviors to parents following various instructions to the parents concerning how they should interact with their children.

As discussed earlier, this project was designed not so much to answer research questions as to create them by investigating the effects of a number of modifications to the strange situation paradigm. Our use of a habituation procedure prior to data collection was suggested by Cohen (1974), and our decision to focus on parental as well as child behaviors was influenced by various theoretical discussions (e.g., Ainsworth, 1972; Gewirtz, 1972; Gewirtz and Boyd, 1977; Hartup and Lempers, 1973; Marvin, 1977). The decision not to instruct parents concerning how they were to behave represents a more dramatic departure from the norms of parent-child attachment studies. This decision has been criticized on the grounds that the lack of instructions given to the parents concerning their behavior in the observation room, and the use of an artificial waiting room, regardless of its degree of acceptance as such a room, would act to increase anxiety and uncertainty not only in the child but in the parents as well. Because such a large portion of our sample was composed of people actively associated with the university, this was probably not the case. The best evidence we can offer to illustrate that neither parents nor children were made anxious or uncertain by our observation setting would be to recount a few of the subjects' actions during and after the observation sessions. A number of the mothers made statements such as "Gee honey, I didn't have any

cavities. I hope you do as well", as they re-entered the waiting room after their visit to the would-be dentist. Their husbands continued the role play and, upon their return from the dentist, reported just how well (or how poorly in one case) their checkups had gone. This unsolicited role playing must have seemed realistic to their children because many of them (the 24 months old especially) questioned why they were also not being examined by the dentist. In response to one such question from her child, a quick-witted mother answered that she had seen the dentist's golf clubs at the door and that she was sure he was now on his way to the course. Two 24 month old children were so insistent upon seeing the dentist too that they left the waiting room at the conclusion of the session to search for him in the adjoining room. Accordingly, we do not feel that the artificiality of our setting was such as to produce either anxiety or uncertainty in our subjects. Informal pilot observations conducted in actual dentists' waiting rooms suggest that the behavior patterns recorded in this study are reflective of real-life situations. Still, it is questionable whether these results could have been obtained had our sample not been so well educated or so accustomed to university settings.

We are now able to offer a number of suggestions concerning procedural issues involved in the study of parent-child relations which might prove beneficial to future researchers. First, it is important to obtain extensive baseline data on parent-child interactions before any form of intervention is imposed to alter or control these interactions. We find it somewhat paradoxical that attachment research involving the strange situation paradigm, research which generally employs Bowlby's work (e.g., Bowlby, 1958; 1969) as its theoretical basis, should now seem so far removed from the primary tenets of ethological investigation. Second, if at all possible this study should be replicated, in a modified form, by conducting the observations in the family's own living

room. Our experience with the home visits suggests that much more parent-child, especially father to child, exchange was evident in the home than in the waiting room setting. Third, much more work should be conducted using the concept of the habituated unfamiliar figure. For example, one might wish to compare the differences between the subject's reaction to male and female figures. In the present study, fathers tended to talk to our female assistant more if their wives were not in the room than when their wives were also present. One wonders if the mothers would exhibit a similar pattern if a male figure were employed. Comparisons of the child's response to figures of each sex would also be of interest. Former research has exclusively used females in the role of the stranger.

Another interesting use of the habituated unfamiliar figure would be to design a study involving not only this figure, but also a total stranger, as a means of comparison to the parents. Comparisons of child to habituated figure and child to stranger rates of exchange could then be used to determine the actual effects of the habituation process. Additionally, it would be useful to design an experiment where the habituated figure was a friend of both parents yet unknown to the child. Such a situation would likely result in high frequencies of parent-other adult interaction which could affect the parent-child relationship.

Fourth, we tentatively suggest that some medium of interaction, i.e., toys, games, puzzles, picture books, be present, and that parental distractors such as magazines be set aside so that more parent-child interaction might be encouraged. An unexpected result discovered by this project was that parents were easily interested in a wide assortment of magazines. We recognize that a distracted parent may be the norm when considering parent-child interactions in a naturalistic setting, and we do not mean to suggest that the setting be so

designed as to force the parents into interaction with their children. Instead we suggest that the distractors be less interesting and that the interaction media be more appealing. For example, one should consider using toys which both parents and children might find interesting, e.g., "Lego" building blocks, "Etch-a-Sketch" (cf., Burgess and Conger, Note 3).

The number of potential hypotheses for future research which could be derived from this study is vast. For example, one might test whether differences exist between the patterns and natures of mother-child and father-child interactions. One might compare the child's interaction with the other adult to that of his interaction with either of his parents. A comparison might be made of the child's rate of exchange with the other adult based on his parents' rates of exchange with this figure to see if the parents affect, by their willingness to interact with others, how freely their child will interact with others. Finally, further analysis of the exchange patterns such as those exhibited by the fathers of 18 month olds needs to be conducted to determine the factors which contribute to make a father more active with his child.

References Notes

1. Kotelchuck, M. The nature of the child's tie to his father. Unpublished doctoral dissertation, Harvard University, 1972.

2. Hollingshead, A. B. The two-factor index of social position. Unpublished manuscript, Yale University, 1957.

3. Burgess, R. L. & Conger, R. Family interaction in abusive, neglectful and normal families. Paper presented at the Biennial Meeting of the Society for Research in Child Development, New Orleans, Louisiana, 1977.

4. Stewart, R. B. Parent-child interaction in a quasi-naturalistic setting. Unpublished masters thesis, The Pennsylvania State University, 1977.

5. To test the primary assumption of our cross-sectional design, i.e., that the 18 and 24 month old children observed in the initial set of observation sessions had behaved as their same-aged counterparts would six months later at the second series of observations, we compared the interaction patterns of those families with children of 18 or 24 months of age at the first time of observation with the patterns of those families whose children were these ages at the second observation session.

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Table 1

Observation Schedule A

Episode Number	Time	Objectives	Persons Present			
1	3 minutes	Base rate	Mother	Father	Child	
2	4 minutes	Parent-Child dyad #1	Mother		Child	
3	4 minutes	Dyad with other adult	Mother		Child	Other Adult
4	3 minutes	Base rate	Mother	Father	Child	
5	4 minutes	Parent-Child dyad #2		Father	Child	
6	4 minutes	Dyad with other adult		Father	Child	Other Adult
7	3 minutes	Base rate	Mother	Father	Child	
8	4 minutes	Base situation with other adult	Mother	Father	Child	Other Adult
	29 minutes total					

Table 2

Mean Rates of Verbal Exchange

Age	Mother	Father	Other	2-tail probability
12 months:				
child to _____	1.3275	.8800	.0525	.138/.003/.003
_____ to child	2.6600	1.7020	.4920	.142/.003/.003
18 months:				
child to _____	2.1275	1.9000	.0250	.582/.001/.002
_____ to child	3.0425	2.9375	.2100	.860/.001/.002
24 months:				
child to _____	2.6500	1.7850	.3525	.166/.003/.012
_____ to child	3.8250	2.3450	.3800	.073/.001/.001

Note: Probability figures represent comparisons of means listed in the following sequence--mother-father comparison, mother-other comparison, father-other comparison.

Table 3

Mean Rates of Physical Exchange

Age	Mother	Father	Other	2-tail probability
12 months:				
child to _____	.4175	.3450	.1275	.263/.059/.042
_____ to child	.7200	.4375	.0525	.425/.060/.057
18 months:				
child to _____	.2650	1.1425	.6750	.186/.581/.583
_____ to child	.8375	.9775	.0000	.719/.063/.001
24 months:				
child to _____	.3050	.4525	.0950	.440/.235/.015
_____ to child	.2750	.2575	.0000	.907/.139/.048

Note: Probability figures represent comparisons of means listed in the following sequence--mother-father comparisons, mother-other comparison, father-other comparison.

Table 4

Mean Rates of Attachment Exchange

Age	Mother	Father	Other	2-tail probability
12 months:				
child to _____	.1711	.1166	.0000	.887/.610/.788
_____ to child	.5244	.2772	.0000	.816/.190/.192
18 months:				
child to _____	.4914	.3746	.0000	.944/.719/.742
_____ to child	.7893	.7522	.0000	.998/.186/.188
24 months:				
child to _____	.1080	.0422	.0000	.882/.754/.822
_____ to child	.2694	.0655	.0000	.880/.810/.930

Note: Probability figures represent comparisons of means listed in the following sequence--mother-father comparison, mother-other comparison, father-other comparison.

Table 5

Mean Rates of Affiliative Exchange

Age	Mother	Father	Other	2-tail probability
12 months:				
child to _____	1.9222	1.0200	.0525	.200/.001/.007
_____ to child	3.6611	1.7554	1.1611	.138/.003/.015
18 months:				
child to _____	2.1144	2.0973	.1736	.634/.009/.014
_____ to child	3.2022	3.7073	.8912	.865/.001/.001
24 months:				
child to _____	2.9342	2.0722	1.0398	.854/.139/.166
_____ to child	4.50000	2.6851	.9822	.844/.001/.001

Note: Probability figures represent comparisons of means listed in the following sequence--mother-father comparison, mother-other comparison, father-other comparison.

Table 6

Mean Relative Rates of Total Interaction

	Mother	Father	Child	2-tail probability
GIVES				
12 months	.415	.282	.250	.689/.159/.898
18 months	.320	.300	.348	.997/.871/.835
24 months	.340	.230	.390	.335/.789/.007
RECEIVES				
12 months	.235	.215	.545	.679/.005/.005
18 months	.220	.228	.530	.998/.001/.001
24 months	.242	.178	.535	.556/.003/.002

Note: Probability figures represent comparisons of means listed in the following sequence--mother-father comparison, mother-child comparison, father-child comparison.

Table 7

Mean Relative Rates of Attachment and Affiliative Interaction

	Mother	Father	Child
Attachment			
Gives			
12 months	.576	.179	.245
18 months	.363	.267	.370
24 months	.452	.280	.268
Receives			
12 months	.124	.292	.584
18 months	.232	.345	.423
24 months	.303	.120	.578
Affiliative			
Gives			
12 months	.379	.255	.212
18 months	.334	.338	.254
24 months	.353	.256	.318
Receives			
12 months	.263	.217	.499
18 months	.236	.258	.473
24 months	.250	.219	.440